

## CLAIMS

*Dubt C1* 1. A method for predicting patient response to treatment of unipolar depression from at least one pre-treatment clinical symptom, comprising: performing at least one measurement of a symptom on said patient and measuring said symptom so as to derive a baseline patient profile; defining a set of a plurality of predictor variables which define the data of the baseline patient profile, said set of predictor variables comprising predictive symptoms and a set of treatment options; deriving a model that represents the relationship between patient response and the set of predictor variables; and utilizing the model of step c) to predict the response of said patient to the treatment.

15 2. The method according to claim 1, wherein said relationship in step c) is determined via at least one automated algorithm.

*Dubt C2* 20 3. The method according to claim 2, wherein said model is a multilayer neural network, and wherein said at least one algorithm is a back propagation learning algorithm.

25 4. The method according to claim 3, wherein said neural network has at least three layers and at least two hidden units.

4. The method according to claim 1, wherein said relationship in step c) is determined via quadratic regression.

5. The method according to claim 5, further comprising using a set of independent variables in said quadratic regression, said set of independent variables representing interactions between said predictive symptoms.

30 35 7. The method according to claim 6, further comprising estimating said interactions between said predictive symptoms by multiplying symptom severities.

8. The method according to claim 1, wherein said model is non-linear.

9. The method according to claim 1, further comprising utilizing the model of step c) to rank by response influence the predictive symptoms to indicate the predictive importance of a predictive symptom.

10. The method according to claim 9, wherein said model is a multilayer neural network utilizing a back propagation learning algorithm having three layers and two hidden units, and an output; and said influence of a predictive symptom is determined by summing a first product and a second product, said first product being a first weight from said predictive symptom to a first hidden unit multiplied by a second weight from said first hidden unit to said output, and

15 said second product being a third weight from said predictive symptom to a second hidden unit multiplied by a fourth weight from said second hidden unit to said output.

11. The method according to claim 1, wherein said set of predictive symptoms comprises a plurality of: Mood, Work, and Energy.

12. The method according to claim 1, wherein said set of predictive symptoms comprises a plurality of: Mood, Severity, and Middle and Late Sleep.

25 13. The method according to claim 1, further comprising: before step a), providing a set of known baseline patient profiles and treatment outcomes, which known profiles and outcomes are used in step c) for deriving said model.

30 14. The method according to claim 13, wherein said model of step c) is a neural network.

35 15. A method of treating depression in a patient comprising the following steps:

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defining a set of a plurality of predictor variables which define the data of a baseline patient profile, said set of predictor variables comprising predictive symptoms and a set of treatment options;  
developing an outcome prediction for said set of treatment options, said

5 outcome prediction based on an analysis of patient symptoms;  
selecting a first preferred treatment option from said set of treatment options based on said outcome prediction;  
applying said first preferred treatment option to the patient; and  
monitoring the patient by comparing a response of the patient to said

10 treatment option to said outcome prediction to provide an updated outcome prediction for the patient.

16. The method of claim 15 further including the step of selecting a second preferred treatment option from said set of treatment options based on said updated outcome prediction.

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*Add A37*  
*Add B17*

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